

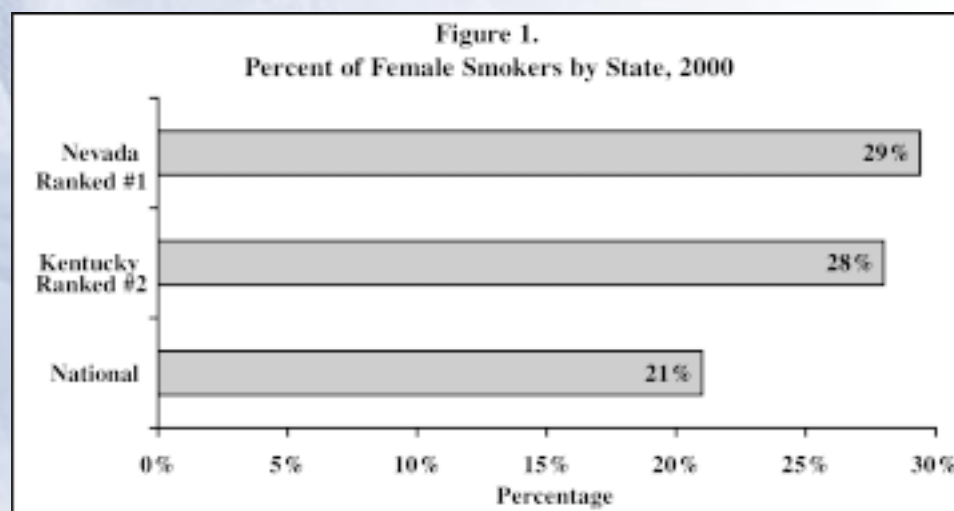
Tobacco Use and Smoking-Related Illnesses

Tobacco use in Kentucky is an issue that evokes strong emotional reactions from all sides. It is as much an economic, agricultural and cultural issue in Kentucky as a health issue. This poses an unenviable challenge to policy makers who attempt to balance these interests. Nonetheless, it is a challenge that must be addressed. Despite the fact that most people know of the negative health consequences associated with tobacco use, Kentucky's population overall had the highest percentage of smoking adults than any other state in the nation in 2000. Kentucky women had the second highest smoking rate nationally in 2000, down from the leading spot in 1999. (Fig. 1) The most recent statistics indicate that 28 percent of adult women in Kentucky smoke cigarettes.

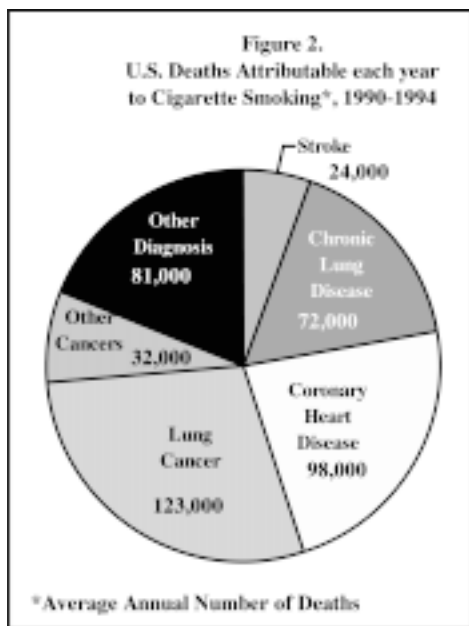
Smoking is a woman's health issue. It is inextricably

linked to numerous causes of morbidity and mortality to women, and men, nationally and in Kentucky – including lung cancer. (Fig. 2) Kentucky's rate of lung cancer ranks among the highest in the nation, due in large part to our high smoking population. Where female mortality from cancer was once highest for breast cancer, lung cancer surpassed that number after smoking caught on as a way of life for many women. The death rate for lung cancer in women surpassed the death rate for breast cancer in 1987. (Fig. 3) Deaths due to lung cancer continue to increase among women but have been declining for men since 1990.¹

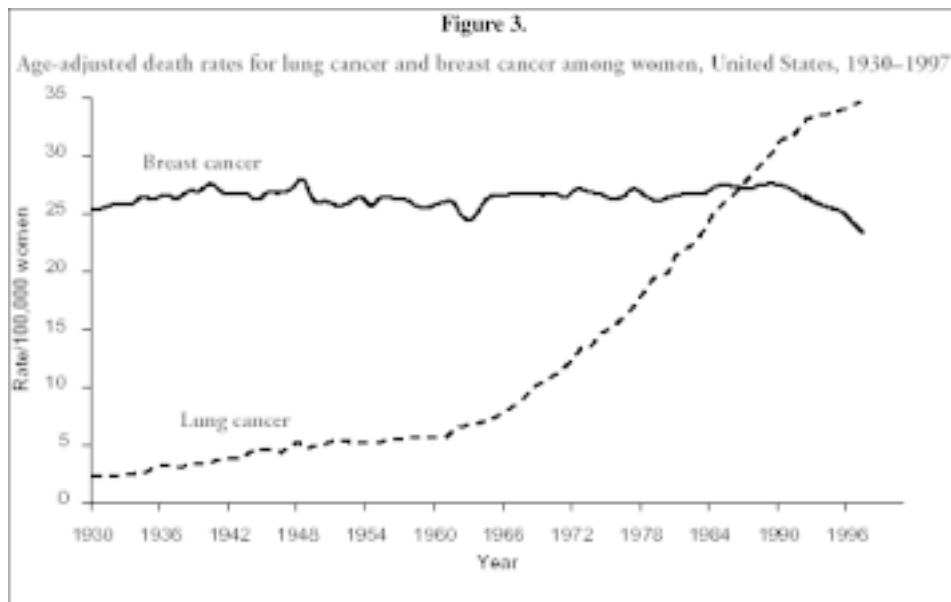
Smokers in Kentucky share some common characteristics. Kentuckians who smoke generally have 12 years of education or less, live in poverty and are under the age of 44. (Fig. 4) Most smokers, up to 90 percent, begin smoking before age 18.²



SOURCE: Centers for Disease Control and Prevention, *Investment in Tobacco Control – State Highlights 2001*



SOURCE: CDC, MMWR, March 3, 1999; 48; 131-38



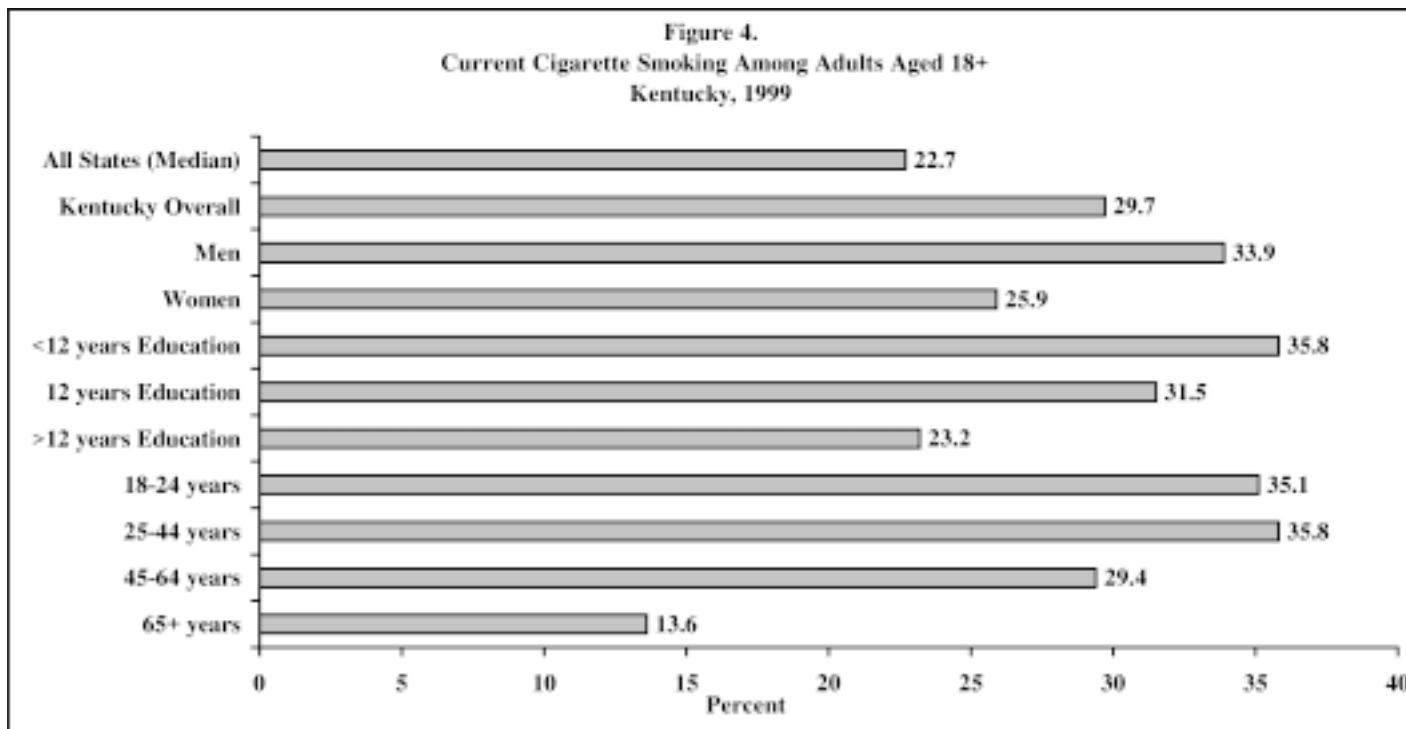
SOURCE: Parker et al. 1996; National Center for Health Statistics 1999; Ries et al. 2000; American Cancer Society, unpublished data

Health Effects

The negative health consequences of smoking are well documented. Individual tobacco use and second-hand smoking, or “passive smoking” are directly related to many chronic illnesses and an increased risk of various conditions (Fig. 5).

An analysis of data from the National Household Survey on Drug Abuse (interviewing 22,292 smokers) revealed that adolescents, women and whites are particularly vulnerable to developing nicotine-dependence symptoms and that at similar or lower levels of use, women were more likely than men to become nicotine depen-

dent.³ Once dependent, smokers are more likely to continue smoking and to smoke more to sustain the nicotine effect. Furthermore, research shows that cigarette smoking is more damaging to women than men. Women who smoke experience more wheezing, breathlessness, persistent cough and asthma than men who smoke.⁴



SOURCE: Kentucky BRFSS, 1999

Figure 5.
Health Effects of Smoking

On reproduction:

- Increased primary and secondary infertility
- Delays in conceiving
- Increased risk of premature membrane rupture
- Increased risk of pre-term delivery

On infants/children:

- Low birth weight babies (approximately 200-250 grams lower)
- Higher rate of stillbirths
- Increased risk of SIDS
- Less likely to breastfeed

On cardiovascular:

- Two to six times more likely to have a heart attack
- Increased risk of coronary artery disease
- Increased risk of ischemic stroke and cerebral hemorrhaging
- Increased risk of peripheral vascular atherosclerosis

On respiratory:

- Increased risk of dying from chronic obstructive pulmonary disease
- Decline in lung function leading to shortness of breath

On cancer:

- Lung cancer is the leading cause of cancer-related death among women
- Increased risk of cancer of the larynx, pharynx, and esophagus
- Increased risk of cervical cancer

On bone density:

- Lower bone density in post-menopausal women
- Increased risk of hip fracture

Other:

- Increased risk of gall bladder disease, facial wrinkling, peptic ulcer, and senile cataracts

SOURCE: *Women and the Tobacco Epidemic: Challenges for the 21st Century*, World Health Organization, 2001

Smoking During Pregnancy

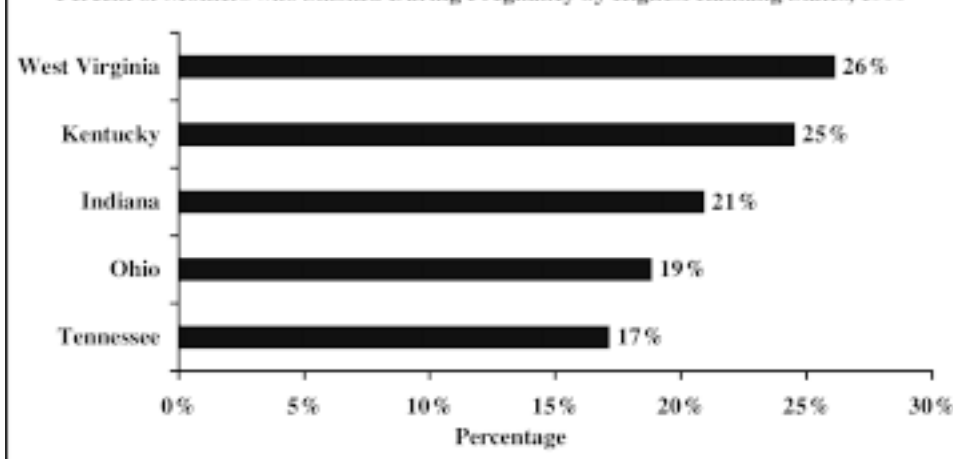
Pregnancy is a strong motivator for women to stop smoking. Cigarette smoking during pregnancy can result in low birth weight babies and has also been associated with infertility, miscarriages, tubal pregnancies, infant mortality and childhood morbidity. Additionally, cigarette smoking may cause long-term learning disabilities.⁵ In 1999, Kentucky had the second highest rate in the nation of women smoking during pregnancy at 24.5 percent.⁶ (Fig. 6)

In most of Eastern Kentucky, where smoking rates tend to be higher than the rest of the state, smoking during pregnancy rates ranged from 33 to 49 percent.⁷ Meanwhile, the national rate of smoking during pregnancy has dropped from 18.4 percent in 1990 to 12 percent in 1999.

Efforts to reduce maternal smoking in Kentucky include the *Make Yours a Fresh Start Family* program administered through local health departments. This program counsels pregnant women on the effects of smoking on the child's health and exposes her to maternal cessation materials as well as other smoking-related health information. The patients' progress is evaluated and documented at every prenatal visit and literature most appropriate to her situation is also provided.

Another initiative recently launched in Kentucky is the *Healthy Babies* campaign, part of the Governor's Early Childhood Initiative KIDS NOW. *Healthy Babies* is a statewide health information initiative to educate

Figure 6.
Percent of Mothers who Smoked During Pregnancy by Highest Ranking States, 1999



SOURCE: National Vital Statistics Reports, *Smoking During Pregnancy in the 1990s*, Vol 49, No 7, August 28, 2001

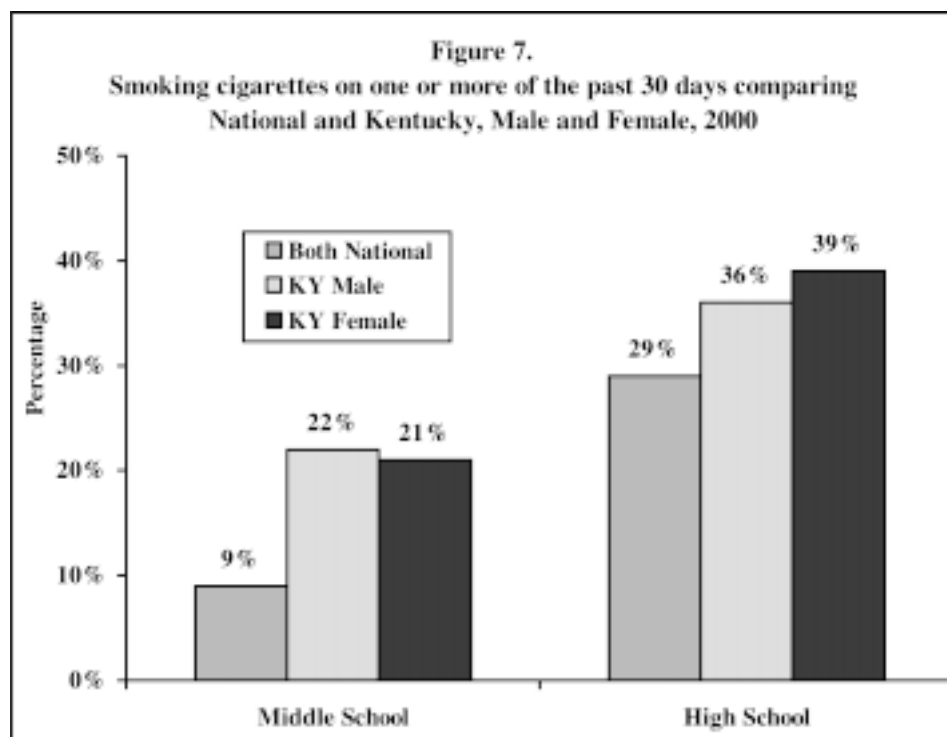
women of child-bearing age and new parents on the importance of making healthy lifestyle choices during pregnancy and the first years of life. This campaign, funded by Kentucky's Phase 1 Tobacco Master Settlement Agreement, consists of an advertising campaign geared towards women of childbearing age and the statewide distribution of educational resources for all new parents.⁸

Despite pregnancy being a strong motivator for many women to quit smoking, other factors also influence maternal smoking rates. At least one study has shown that smoking rates among pregnant women are responsive to tax increases. A tax hike of \$0.55 per pack of cigarettes can reduce maternal smoking by about 22 percent for certain sub-populations and overall, a 10 percent increase in price is capable of reducing smoking rates by 7 percent.⁹

Young Women Smoking

Young women in Kentucky have one of the highest rates of smoking in the country. According to the 2000 Kentucky Youth Tobacco Survey, both male and female middle school and high school students smoking rates greatly surpassed national rates. (Fig. 7)

According to the *U.S. Surgeon General's Report on Women and Smoking*, nearly all women smokers started their habit in adolescence.¹⁰ Despite the widespread knowledge that cigarette smoking is bad for your health, many teens continue to pick up the habit. Why they decide to become smokers is a complex issue. A study conducted by the

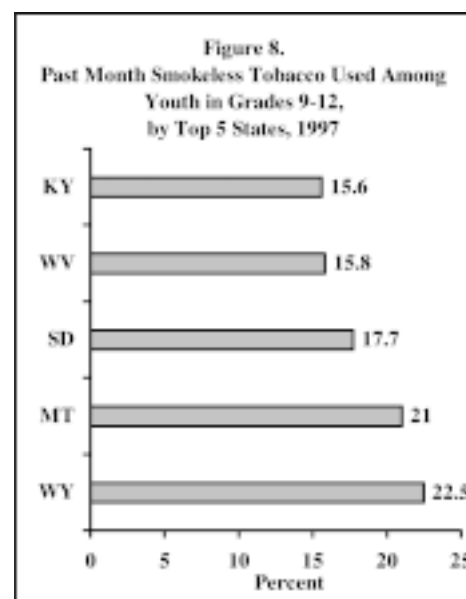


SOURCE: 2000 Kentucky Youth Tobacco Survey

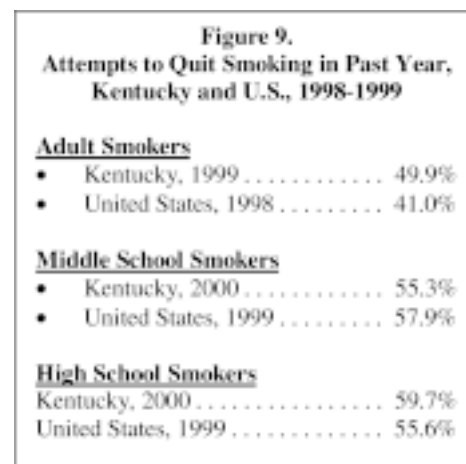
University of Illinois at Chicago found that the percentage of regular smokers was substantially greater among girls with a high level of family conflict than those with a low level (17.7 percent versus 7.1 percent respectively).¹¹ Other findings influencing an adolescent's decision to smoke include¹²:

- Not doing well in school;
- Having parents who smoke, as well as parent-child conflicts;
- Peer pressure and alcohol use;
- Friends who smoke, offers of cigarettes, believing that "most other kids" smoke, and marijuana use.

Kentucky youth are also among the top users of smokeless tobacco products (e.g., dip and chew). Approximately 16 percent of Kentucky's high school youth in grades 9 through 12 used some type of smokeless tobacco in the last month, compared to 9.3 percent nationally.¹³ (Fig. 8)



SOURCE: Centers for Disease Control and Prevention, Kentucky Tobacco Control Highlights, 1997



SOURCE: Kentucky Tobacco-Related Data, Dr. Ellen Hahn, UK College of Nursing, 2001

Figure 10.
Gender Differences in Smoking Cessation

- Nicotine replacement therapy may not be as effective for women.
- Women smokers are more fearful than men of gaining a lot of weight, if they quit.
- Medications to aid smoking cessation are not currently recommended for pregnant women.
- A woman's menstrual cycle affects tobacco withdrawal symptoms, and responses to anti-smoking drugs may vary by cycle phase.
- Husband may provide less effective support to women who are trying to quit smoking than wives give to husbands.
- Women may be more susceptible than men to environmental cues to smoking, such as smoking with specific friends or smoking associated with specific moods.
- Many women may enjoy the feeling of control associated with smoking a cigarette.

SOURCE: National Institutes of Health, NIH News Release, "Quitting Smoking Harder for Women than for Men," May 1, 2001

Figure 11.
Percent of Deaths from Chronic Obstructive Pulmonary Disease, by Sex, Kentucky, 1999



SOURCE: Kentucky Department for Public Health, 1999 Kentucky Annual Vital Statistics Report

High school girls are much less likely to use smokeless tobacco products than high school boys.

Smoking Cessation

Nearly 50 percent of all Kentucky adult and youth smokers have attempted to quit at some time (Fig. 9). The health benefits from quitting smoking are numerous and outweigh the concern many women have of gaining weight. More women than men fear weight gain if they quit smoking, however, few studies have found a relationship between weight gain and successfully quitting smoking for either women or men. For women, the average weight gain is around five pounds and can be controlled through positive daily lifestyle changes with increased exercise and diet.¹⁴

Since the late 1970s and early 1980s, the probability of attempting to quit smoking, and succeeding, has been equal among women and men.¹⁵ However, there are reports of gender differences between women and men that may make it more difficult for women to stop smoking than men.¹⁶ (Fig. 10)

The majority of smokers who try to quit smoking report doing so on their own, even though this is the least effective method.¹⁷ The most successful treatments are multi-component cognitive behavioral programs that incorporate strategies to prepare and motivate smokers to stop smoking. Women are more likely than men to use intensive methods and generally prefer to find mutual support through a "buddy" system where shared responsibility and encouragement are available.

There are numerous effective smoking cessation programs available to women in Kentucky. Among the most effective is the Cooper/Clayton method promoted and supported by the Kentucky Department for Public Health in partnership with the Kentucky Cancer Program and available through local health departments. Several tobacco control organizations, voluntary health groups such as the American Lung Association and coalitions of concerned individuals such as Kentucky ACTION have joined efforts to control the use of tobacco, especially by Kentucky youth. Also, the Department for Public Health makes available a tobacco control coordinator in every local health department throughout the state as a result of funds available from Phase I of the Tobacco Master Settlement Agreement.

Smoking-Related Illnesses

Smoking is the number one avoidable risk factor for most chronic obstructive lung diseases also known as chronic obstructive pulmonary diseases (COPD). COPD includes several related irreversible conditions that limit one's ability to exhale.¹⁸ The two major diseases in this category are emphysema and chronic bronchitis. In emphysema caused by smoking, which constitutes the vast majority of cases, the very small airways (bronchioles) that join the alveoli are damaged, and the lung walls lose elasticity, making it difficult to exhale.¹⁹ Shortness of breath is the predominant early symptom of emphysema, however, emphysema patients have typically lost between 50 and 70 percent of their lung

tissue by the time symptoms begin to appear.²⁰

Chronic bronchitis is characterized by structural changes in the airways of the lungs, and enlargement of mucous glands, which causes coughing and production of sputum.²¹ Cigarette smoke causes chronic bronchitis through inflammation and damage to the airways. Chronic bronchitis also causes shortness of breath and is often accompanied by infection, mucus production, and coughing.²² As chronic bronchitis often coincides with emphysema, it is frequently difficult to distinguish between the two conditions.²³

Nationally, there are approximately 1.8 million people living with emphysema. Emphysema ranks 15th among chronic conditions that contribute to activity limitations with almost 44 percent of individuals with emphysema reporting that their daily activities have been limited by the disease.²⁴

Many of the people with emphysema are older men, but the condition is rapidly increasing among women. Nationally, in 1994, male outnumbered females by more than 54 percent. Within 2 years the percent difference between males and females decreased to 10 percent.²⁵ In Kentucky, nearly 55 percent of COPD deaths between 1995 and 1997 were to men²⁶, however, in 1999, men constituted 52.5 percent.²⁷ (Fig. 11)

While COPD is more common among men than women, it is one of the few leading causes of death that has a higher age-adjusted rate for whites than blacks. White males had the highest rate of

death in 1999 at 78.9 per 100,000 population, while black females had the lowest, at 39.1.²⁸ (Fig. 12) The overall state rate was 58.6, making it the fourth leading cause of death in Kentucky.²⁹

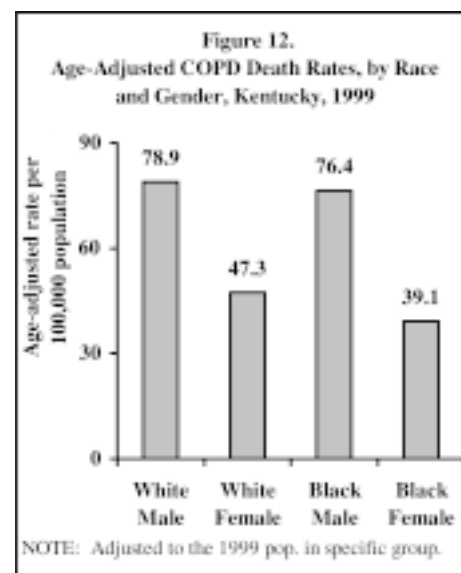
COPD is also a major contributor to morbidity in Kentucky, particularly among women. In 2000, there were 16,467 hospital discharges with a diagnosis of COPD (coded as DRG 088). More women are hospitalized with a COPD diagnosis than men. Of the total COPD discharges, 9,556 were among women, while the remaining 6,911 were to men.³⁰ (Fig. 13)

Kentucky's hospitalization rate for diseases of the respiratory system (classified as Major Diagnostic Category 04) doubles the national rate. In 2000, Kentucky had 70,182 hospitalizations for MDC 04, representing 14.1 percent of all hospitalizations – second only to diseases of the circulatory system (MDC 05).³¹ Nationally, MDC 04 represented only 7.9 percent of all hospitalizations.³²

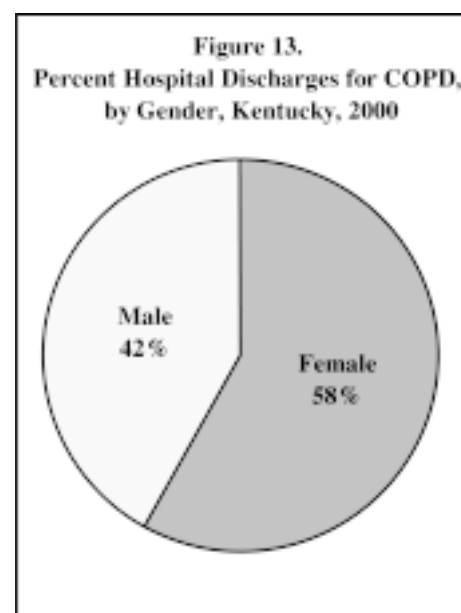
Lung Cancer³³

Nationally, in 2001, there were approximately 625,000 new cases of cancer with 267,300 women dying of cancer. Lung cancer makes up over 25 percent of those deaths killing approximately 67,300 women and has been the leading cause of cancer death to women since 1987. Nationally, smoking is directly responsible for 87 percent of all lung cancer cases.³⁴

Female deaths from lung cancer far exceed deaths from the other three most common



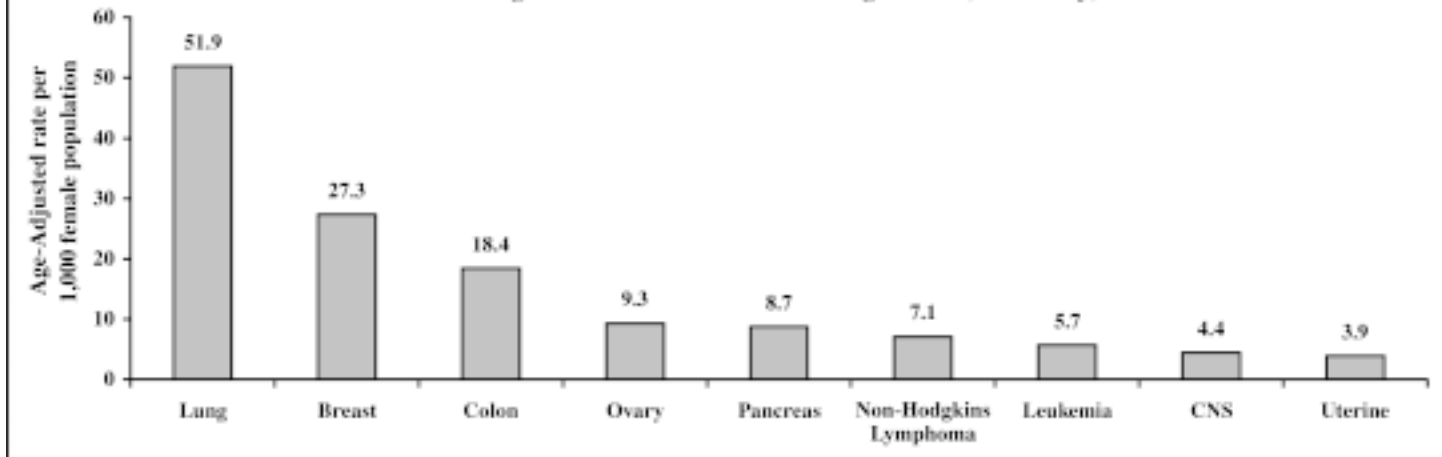
SOURCE: Kentucky Department for Public Health, 1999 Kentucky Annual Vital Statistics Report.



SOURCE: Kentucky Department for Public Health, Health Policy Development Branch, 2000 Kentucky Hospital Discharge File

Figure 14.

Leading Cause of Cancer Death Among Women, Kentucky, 1999



SOURCE: Kentucky Department for Public Health, Surveillance and Health Data Branch

Figure 15.

Female Lung Cancer Cases (non-small cell) as Percent of Total Incidence, Kentucky, 1995 - 1999



SOURCE: Kentucky Cancer Registry, calculated from 1999 Kentucky Cancer Incidence Report

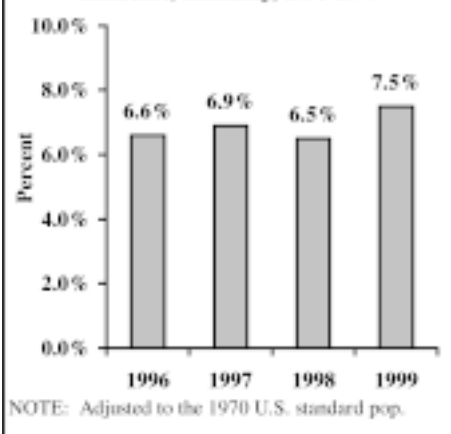
the age-adjusted female death rate from lung cancer was 51.9 per 100,000 - the second highest in the nation. While the incidence of lung cancer in females has leveled off nationally, the distribution of women developing lung cancer (as a percent of all diagnosed cases) continues to increase, particularly in Kentucky. (Fig. 15) In Kentucky in 1995, women constituted 34.9 percent of all newly diagnosed lung cancer cases. However, that figure grew over 4 percent by 1999, as women constituted 39.2 percent of newly diagnosed lung cancer cases.³⁷

Likewise, lung cancer is striking women at younger ages. The percent of women under 50 developing lung cancer is increasing in Kentucky. From 1996 to 1999, the percent of women under 50 diagnosed with cancer (as a percent of all women) grew from 6.6 percent to 7.5 percent respectively.³⁸ (Fig. 16)

The nation's lung cancer death rate in females continues to increase, although at a slower rate since the beginning of the 1990s. While there is an overall decrease in the national death rate from lung cancer, there remains a persistently high death

Figure 16.

Lung Cancer Cases for Women Under 50, as Percent of Total Female Incidence, Kentucky, 1996-1999



SOURCE: Kentucky Cancer Registry, calculated from 1999 Kentucky Cancer Incidence Report

female cancer killers: breast, colon, and ovary. (Fig. 14) In Kentucky, over 3,400 new cases of lung cancer among men and women were reported in 2001, with 3,200 deaths.³⁵ There are two main categories of lung cancer: non-small cell lung cancer and small cell lung cancer. Non-small cell lung cancer (NSCLC) is the most common type of lung cancer and occurs in eighty percent of those diagnosed. Small cell lung cancer (SCLC) is more aggressive, but is only diagnosed in twenty percent of lung cancer patients.

In 1999, the Kentucky lung cancer incidence rate for females was 56.8 per 100,000 people,³⁶ the third highest in the nation, and

rate among Kentucky women. Many factors may contribute to this increase - lack of early detection methods, social factors (i.e. gender differences in seeking health care), psychological factors (i.e., fear of diagnosis), and high rates of smoking.

Smoking and the Development of Lung Cancer

With 87 percent of lung cancer deaths associated with cigarette smoking, this makes smoking the greatest preventable risk factor. The prevalence of smoking among women in Kentucky remains high and is expected to surpass male rates within the next five years. Whether lung cancer represents a different disease process in women than in men is unclear. Strong evidence suggests that women are more susceptible than men to the carcinogenic effects of cigarettes on their lungs. There also appears to be a difference in the relative distribution of types of lung cancer (by histology) between men and women that is not fully explained by differences in smoking patterns. Women who smoke appear to be at higher risk of developing small-cell lung cancer than squamous-cell lung cancer, whereas men who smoke have a similar risk for the two types of lung cancer. Nationally, women smokers, particularly younger women, are more likely to develop adenocarcinoma of the lung. Studies suggest that estrogen may play a causative role in the development of this particular type of lung cancer.

Risk Factors

The number one risk factor in developing lung cancer is smoking. A smoker can

reduce their risk of developing lung cancer by quitting. A former smoker always has a higher risk of developing lung cancer than someone who has never smoked.³⁹ Other risk factors include:

- Age
- Gender
- Genetics
- Exposure to environmental factors, such as radon, asbestos and other chemicals.

Staging and Symptoms

Often, a person exhibits no symptoms until the disease is advanced. (Fig. 17) Only 15 percent of lung cancers are diagnosed in the early stages when curative treatments are the greatest.

As with most cancers, lung cancer treatment is more successful when found and treated in its earliest stages. The stage of lung cancer defines the extent of the spread of the cancer from its original location in the lung to other parts of the body, and determines the prognosis of the disease. The frequency of lung cancer cases found in advanced stages is high among both sexes. For women in Kentucky, the majority of non-small cell lung cancer cases (34 percent) are diagnosed in the “distant” stage, meaning the cancer has already spread from the lungs to other “distant” parts of the body. For the more deadly small cell lung cancer, an alarming 56 percent of cases are found in the distant stage, versus 7 percent that are found in the localized stage.⁴⁰ (Figs. 18 and 19)

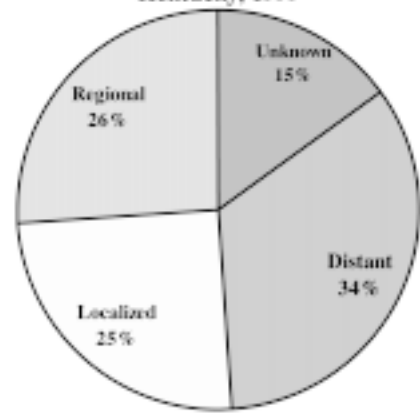
Currently, there is not an official lung cancer screening

Figure 17.
Symptoms of Lung Cancer

- Persistent cough or coughing
- Shortness of breath
- Fatigue
- Chest, shoulder, upper back, or arm pain
- Repeated bronchitis or pneumonia
- Blood coughed up in sputum
- Loss of appetite and weight loss
- Hoarseness
- Wheezing
- Swelling in the face or neck
- General pain

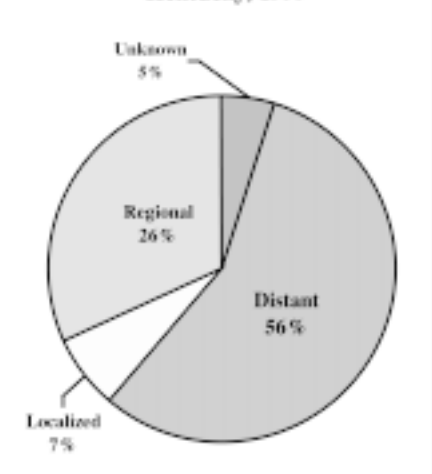
SOURCE: Alliance for Lung Cancer Advocacy, Support and Education (ALCASE), The Lung Cancer Manual, 1999

Figure 18.
Female Lung Cancer Frequency (non-small cell) by Stage of Diagnosis, Kentucky, 1999

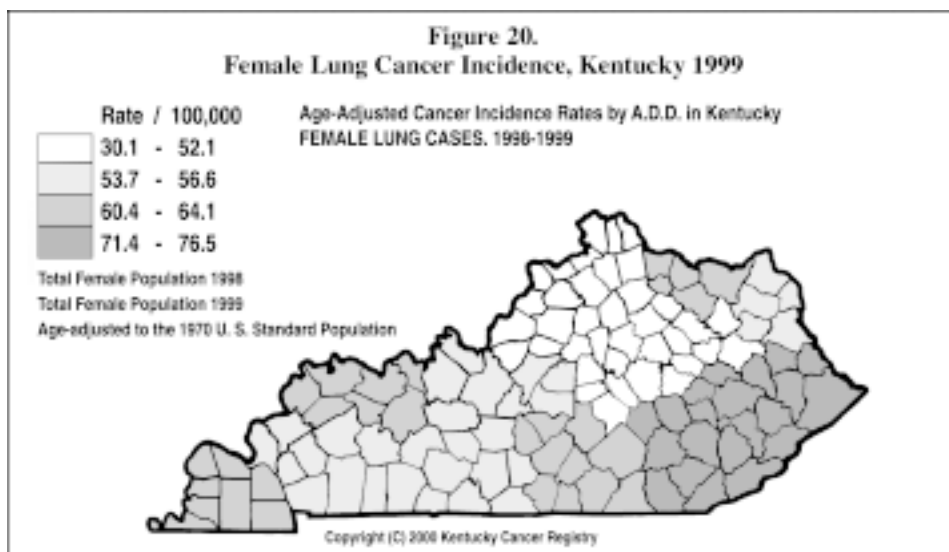


SOURCE: Kentucky Cancer Registry, 1999 Kentucky Cancer Registry Incidence Report

Figure 19.
Female Lung Cancer Frequency (small cell), by Stage of Diagnosis, Kentucky, 1999



SOURCE: Kentucky Cancer Registry, 1999 Kentucky Cancer Registry Incidence Report



SOURCE: Kentucky Cancer Registry, 1999

program recommended for the general population. If a person is considered to be at high risk because of a smoking history, family history or work exposure, then a discussion regarding diagnostic testing should be brought up with a health care provider. The most common diagnostic testing routines for lung cancer include chest x-rays and spiral CT exams.

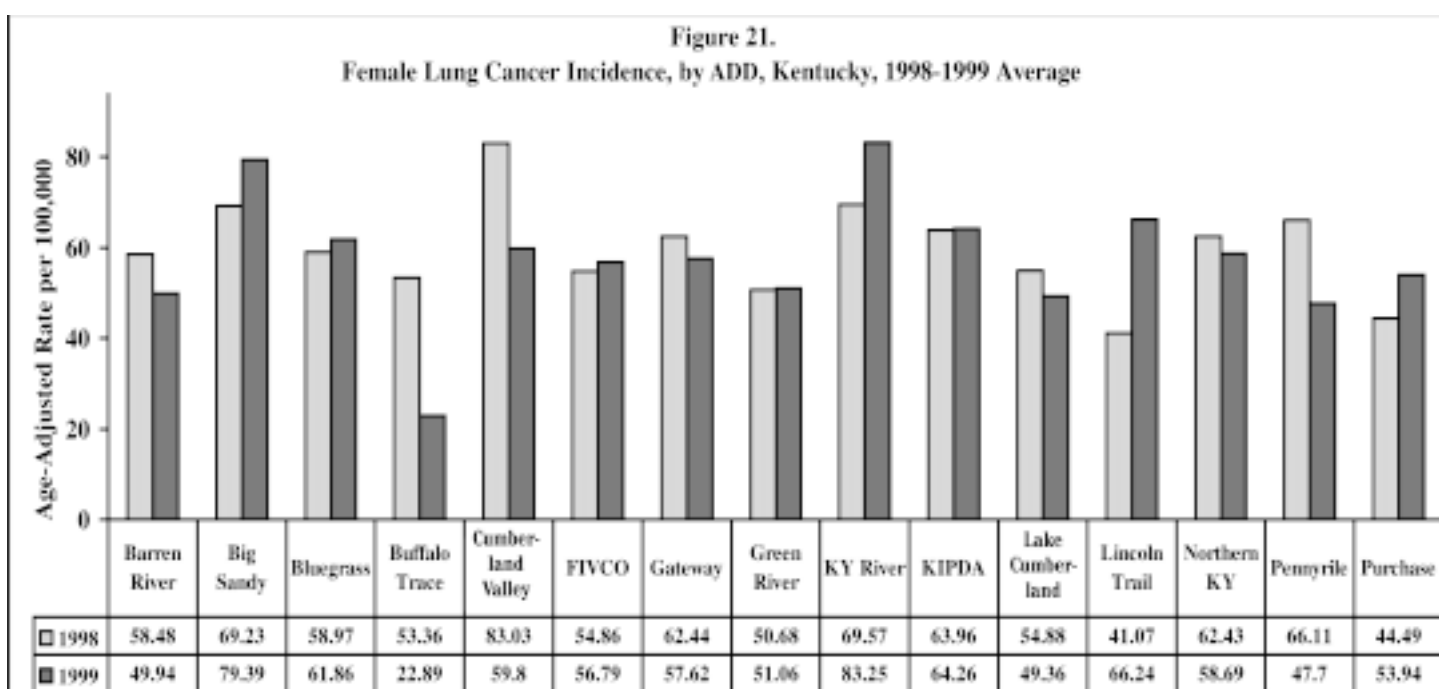
Geographic Variation in Lung Cancer Incidence

Lung cancer cases in Kentucky reveal a higher incidence among women in the Southeastern region of the state. In 1999, the Kentucky Cancer Registry reported the lung cancer incidence rate for women in this area to be 74 per 100,000 female population, far exceeding the average statewide rate for

females of 56.8. (Figs. 20 and 21) This phenomenon may be attributed to a higher number of smokers in the area, lack of adequate health care, less access to physicians, and exposure to environmental factors.

Conclusion

Now more than ever, notable attention has been focused on this very important public health issue. While smoking rates may have dropped in the overall population since the 1960s, trends in Kentucky indicate it is increasing among the most vulnerable populations – pregnant women and youth. Reducing the prevalence of smoking in Kentucky will undoubtedly improve the health and well-being of the general population and save millions of dollars in related health care expenses. While it is difficult to balance the economic issues with the health consequences, it is something that cannot be ignored.



SOURCE: Kentucky Cancer Registry, 1999

NOTES

- ¹ National Cancer Institute, *Cancer Facts*, Fact Sheet 1.16, 9/26/2000. http://cis.nci.nih.gov/fact/1_16.htm.
- ² *National Women's Health Report*, Vol. 23, Number 4. National Women's Health Center, August 2001.
- ³ NIDA News Release, *Teens, Women and Whites More Vulnerable Than Others to Becoming Nicotine-Dependent*, <http://www.drugabuse.gov>.
- ⁴ *Cigarette Smoking More Damaging to Women Than Men*, Journal of Epidemiology and Community Health, Nov. 2000.
- ⁵ CDC, <http://www.cdc.gov/ncbddd/bd/abc.htm>.
- ⁶ CDC National Vital Statistics Reports, *Smoking During Pregnancy in the 1990s*, Vol 49, No 7, August 28, 2001.
- ⁷ Kentucky Tobacco-Related Data, Dr. Ellen Hahn, UK College of Nursing, 2001.
- ⁸ Press Release: *Governor's Office Launches Healthy Babies Campaign*, Frankfort, KY. (December 4, 2001).
- ⁹ *Cigarette Taxes and Smoking During Pregnancy*, American Journal of Public Health, Nov. 2001.
- ¹⁰ Surgeon General's Report on Women and Smoking, *Pattern of Tobacco Use Among Women and Girls*, 2001.
- ¹¹ Analysis of Multiple Data Sets for Predictors of Different Stages of Tobacco Use Among Adolescents (<http://www.rwiff.org/app/health/028676s.htm>).
- ¹² Ibid.
- ¹³ Centers for Disease Control and Prevention, Kentucky Tobacco Control Highlights, 1997.
- ¹⁴ U.S. Department of Health and Human Services. *The Health Benefits of Smoking Cessation*. DHHS publication no. (CDC 90-8416, 1990).
- ¹⁵ Surgeon General's Report on Women and Smoking, *Pattern of Tobacco Use Among Women and Girls*, 2001.
- ¹⁶ National Institutes of Health, NIH News Release, "Quitting Smoking Harder for Women than for Men," May 1, 2001.
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- ¹⁸ WebMD – *Chronic Obstructive Lung Disease*, <http://my.webmd.com/content/article/1680.50719>.
- ¹⁹ WebMD – *Chronic Obstructive Lung Disease*, <http://my.webmd.com/content/article/1680.50719>.
- ²⁰ Ibid.
- ²¹ Ibid.
- ²² Ibid.
- ²³ Ibid.
- ²⁴ American Lung Association. <http://www.lungusa.org/diseases/lungemphysem.html>.
- ²⁵ American Lung Association. <http://www.lungusa.org/diseases/lungemphysem.html>.
- ²⁶ Kentucky Department for Public Health, *Health Status of Kentuckians 1999*.
- ²⁷ Kentucky Department for Public Health, *1999 Kentucky Annual Vital Statistics Report*.
- ²⁸ Kentucky Department for Public Health, *1999 Kentucky Annual Vital Statistics Report*.
- ²⁹ Ibid.
- ³⁰ Kentucky Department for Public Health, Health Policy Development Branch, *2000 UB-92 Hospital Discharge File*.
- ³¹ Kentucky Department for Public Health, Health Policy Development Branch, *2000 UB-92 Hospital Discharge File*.
- ³² MEDSTAT Group *2000 DRG Guide*, The MEDSTAT Group, Inc., 2001.
- ³³ University of Kentucky Multidisciplinary Lung Cancer Program provided the majority of statistical data in this section.
- ³⁴ American Lung Association. <http://www.lungusa.org/tobacco/>.
- ³⁵ American Cancer Society (ACS), *Cancer Facts and Figures 2001*.
- ³⁶ Kentucky Cancer Registry, *1999 Kentucky Cancer Incidence Report*.
- ³⁷ Kentucky Cancer Registry, *1999 Kentucky Cancer Incidence Report*.
- ³⁸ Kentucky Cancer Registry, *1999 Kentucky Cancer Incidence Report*.
- ³⁹ Alliance for Lung Cancer Advocacy, Support and Education (ALCASE), *The Lung Cancer Manual*, 1999.
- ⁴⁰ Kentucky Cancer Registry, *1999 Kentucky Cancer Incidence Report*.